Wintering waders in Dakhla Bay, Western Sahara

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During the last twenty years, a considerable amount of information concerning the wintering wader population of the Atlantic coast of Morocco and the Saharan wetlands has been collected either by foreign expeditions (Kersten & Smit 1984) or by local ornithologists (Dakki *et al.* 1989). Yet the southern areas of the former Spanish Sahara remained largely unsurveyed as a result of political instability. The present paper presents the results of an expedition which took place from 2-11 January 1995. The total number of waders present was internationally important. In addition, five species (Ringed Plover, Kentish Plover, Knot, Sanderling & Bar-tailed Godwit) were present in internationally important numbers in their own right.

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INTRODUCTION

During the last twenty years, a considerable amount of information concerning the wintering wader population of the Atlantic coast of Morocco and the Saharan wetlands has been collected either by foreign expeditions (Kersten & Smit 1984) or by local ornithologists (Dakki *et al.* 1989). Yet the southern areas of the former Spanish Sahara remained largely unsurveyed as a result of political instability. Recently the area was visited by a team of French ornithologists who made a brief survey of the area (Beaubrun *et al.* in Dakki *et al.* 1989). Data collected suggested that the bay could hold important numbers of waders and other waterbirds.

In December 1993, we visited the area as part of an expedition designed to estimate numbers of wintering Lesser Black-backed Gulls *Larus fuscus* (Rock 1994), and only part of the bay was surveyed. However, this brief survey highlighted the importance of the area, as several thousands of waders, gulls and terns were found to be present.

After this visit and several contacts with ornithologists at the Centre d'Etudes de Migrations d'Oiseaux (CEMO) of the Institute Scientifique de Rabat, we decided to organise a full census of the bay in order to assess the real importance of the area for wintering waders as well as for other waterbirds, namely gulls and terns. The expedition also aimed to cover Cintra Bay, a small, moon-shaped bay further south. The present paper presents the results of this expedition, which took place from 2-11 January 1995, and documents the international importance of Dakhla Bay for wintering waders.

STUDY AREA

Dakhla is a sheltered coastal bay located at 23° 42'N 150° 54'W (central co-ordinates), approximately 350 km north of the Mauritanian border in the former Spanish Sahara. Cintra is south of the Tropic of Cancer, a few kilometres south of Dakhla (Figure 1).

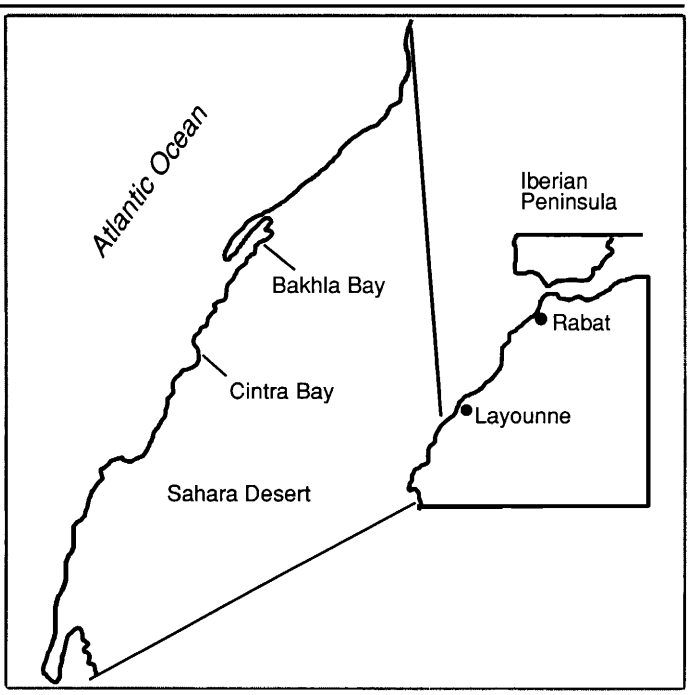

Figure 1. Location of Cintra and Dakhla bays.

Dakhla Bay is separated from the sea by a sand and sandstone peninsula, which is rather flat and only a few metres above sea level and extends for approximately 45km. The bar and the inland shore are almost parallel giving a rectangular appearance to the bay. The maximum width is *c.* 14 km and the mouth of the bay is 10 km wide.

The bay is rather shallow, with a maximum depth of only 22m, especially in the central and southern areas. The main channels are aligned in a NE-SW direction. The largest areas of intertidal habitat are located in the northern part of the bay and along the inner shore of the peninsula (Figure 2). Along the eastern shore of the bay, at the edge of the Sahara desert, there are small bays and inlets with intertidal sand flats, the largest of which are shown in Figure 2. Along this shore, the

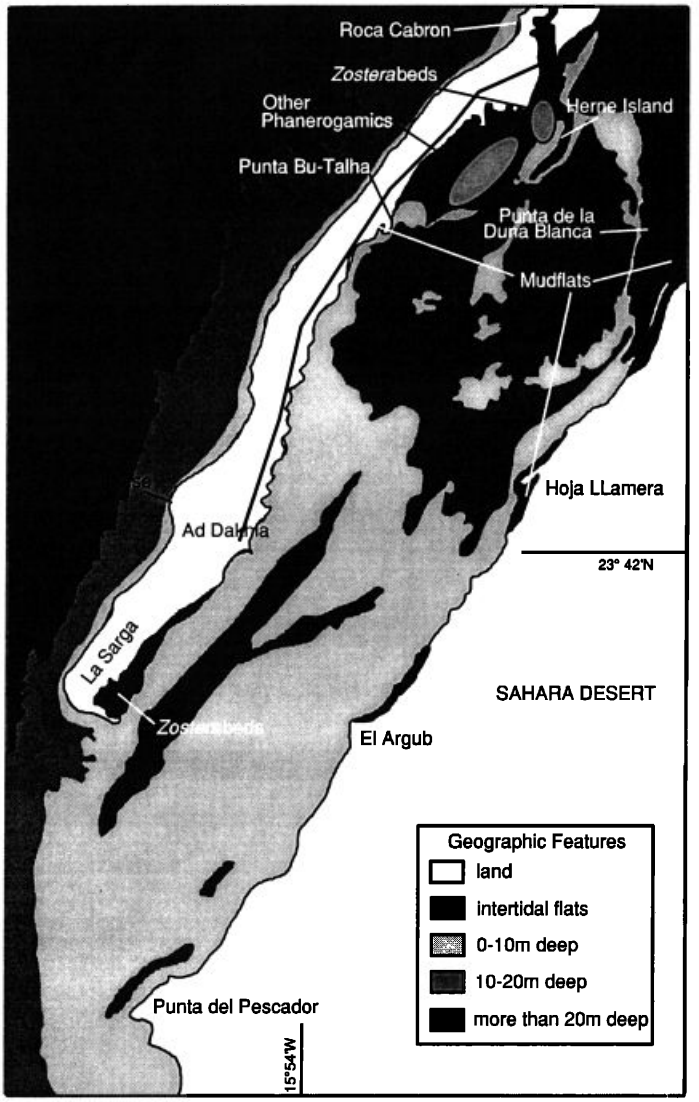

Figure 2. Dakhla Bay geographic features

coast is higher than on the peninsula, with sandstone cliffs. The dominant substrate of the intertidal areas in the bay is sand, although a few muddy areas can be found in the most sheltered inlets. Significant areas of sandflats are covered with marine phanerogamics, particularly on the west side. In two areas, La Sarga and near the island of Herne, the sands are covered with *Zostera* spp. Finally, saltmarshes can be found in a few sheltered places and are usually associated with mudflats; Puta Bu-Talha, Hoja Llamera and northeast of Punta de la Duna Blanca (Figure 2). The outer shores of the peninsula comprise a mixture of rocky and sandy habitat types, with variable-sized beaches and rocky outcrops.

Cintra is an open moon-shaped bay slightly more than 20 km in length. The shore is fine sand with a gentle slope and small intertidal sand flats, at least in the northern part. Just north of the bay, there is an area of shallow rock flats, approximately 3 km long and less than one kilometre wide. The area can only be reached from the northern end.

The prevailing winds during our visit to the area followed the coastline, *i.e* they were north-easterly, and were moderate and permanent. Only during one afternoon did the winds blow across the bay carrrying Saharan sands.

METHODS

The surveys were carried out by walking along the sandflats during the periods close to high tide. There appeared to be no spring tides while we were there but this could not be confirmed with a tidetable. It is possible that the permanent north-easterly winds could have disguised the tidal amplitude.

The birds were counted while feeding or roosting by two observers in separate areas. The flats were divided into sectors to avoid overlapping counts, and we think little duplication occurred as the birds did not move between sectors. Whenever possible, contiguous areas were counted in the same day.

The outer shore of the peninsula was also surveyed, from Roca Cabron to the southern extremity, and for practical reasons two sectors were identified; north and south of the lighthouse.

The habitat type delimitation was done very roughly in the field without the aid of geographical instruments and using sheet 1690 of the Plans of the North-West Coast of Africa 1:50,000 (Admiralty Publications 1993). However, the map used to produce those we are now presenting was sheet 578, Bahia de Vila Cisneros, from the 1:50,000 series produced by the Instituto Hidrografico de la Marina (IHM 1985). This covers the whole bay whereas the Admiralty map at the same scale covers only the southern end from Ad Dakhla to Punta del Pescador.

RESULTS AND DISCUSSION

The surveys showed that internationally important numbers of waders use the area. Five species, out of a total of 20 identified, accounted for more than 75% of the total and were present in internationally important numbers in their own right: Ringed Plover *Charadrius hiaticula*, Knot *Calidris canutus*, Sanderling *Calidris alba*, Dunlin *Calidris alpina* and Bar-tailed Godwit *Limosa lapponica*. In Table 1, we present the total number of waders in the two bays, Cintra and Dakhla, at the latter site also including birds counted on the seashore.

The vast majority of the birds counted at Cintra were on the rock flats just north of the beach and around the village at the northern tip of the bay. In Figure 3, we have marked concentrations of all wader species observed in January 1995. It is clear that only a few places hold relatively large numbers of birds, namely the inner end of the peninsula, the northernmost flats, with its phanerogamics and *Zostera* beds and the north-eastern bays.

The pattern of distribution differed between species. Some concentrated on a few sites whereas others tended to be found throughout most of the bay. Below, we give a brief explanation of the distribution of the most numerous species.

Oystercatcher - The largest concentrations were found at La Sarga and at the northern flats but also in a few other places

Table 1. Total number of waders at Dakhla and Cintra Bays, Western Sahara (*internationally important)

	Dakhla Bay	Cintra Bay
Oystercatcher *Haematopus ostralegus*	817	61
Avocet *Recurvirostra avosetta*	3	0
Cream-coloured courser *Cursorius Cursor*	2	0
Ringed plover *Charadrius hiaticula**	3,293	48
Kentish Plover *Charadrius alexandrinus**	1,288	20
Grey Plover *Pluvialis squatarola*	1,362	20
Lapwing *Vanellus vanellus*	0	1
Knot *Calidris canutus**	8,400	0
Sanderling *Calidris alba**	2,808	705
Little Stint *Calidris minuta*	395	0
Curlew Sandpiper *Calidris ferruginea*	4	0
Dunlin *Calidris alpina*	9,930	1
Bar-tailed Godwit *Limosa lapponica**	7,192	40
Whimbrel *Numenius phaeopus*	8	1
Curlew *Numenius arquata*	79	0
Spotted Redshank *Tringa erythropus*	6	0
Redshank *Tringa totanus*	391	0
Greenshank *Tringa nebularia*	16	2
Common Sandpiper *Actitis hypoleucos*	2	0
Turnstone *Arenaria interpres*	163	100
TOTAL	**36,159**	**999**

including the beaches and rocky areas along the seashore. It was absent from the muddy areas.

Ringed Plover - As for the Oystercatcher, the largest concentrations were found at La Sarga and in the northern flats, especially in the area of the phanerogamic beds. Small numbers of birds were also seen in a few other places, both inside the bay and along the seashore.

Kentish Plover - Only La Sarga held relatively high numbers but the species was also present in several other places, mainly along both sides of the peninsula. It was not seen on any of the muddy areas.

Grey Plover - The Grey Plover occurred in small numbers in several places in the bay and also along the seashore. No large concentrations were found but the species was counted on both sandy and muddy areas.

Dunlin - The species was strongly concentrated in three main areas; La Sarga, the northern flats west of Herne Island and the easternmost bay which had the largest mudflats. The latter site held 35% of the total. In the rest of the bay only small numbers were present, yet Dunlin was the most abundant species in Dakhla Bay.

Knot - The second-most numerous species in the bay, Knot were strongly concentrated in the northern sandflats close to Herne Island, where *Zostera* spp. and phanerogamics beds cover a large area. Smaller numbers were found in only two other sites, La Sarga and the bay east of Punt de la Duna Blanca.

Sanderling - This species was well-distributed throughout most of the bay and along the seashore. However, somewhat larger concentrations can be found on the northernmost flats. This species is almost absent from the mudflats.

Bar-tailed Godwit - This was the third-commonest wader species. It was reasonably well-distributed but showed a preference for the northern flats, close to Herne Island, and for La Sarga inlet. Smaller concentrations were found along the east shore. Although the largest numbers were present on the sandflats, Bar-tailed Godwits were also present in significant numbers at the mudflat sites.

CONCLUSION

This short paper aims to highlight the international importance of Dakhla Bay for wintering waders and the results show this very clearly. Under internationally accepted criteria (Rose 1994) the area qualifies as internationally important for its total numbers, which exceed 20,000 birds, as well as for the numbers of several species for which thresholds of at least 1% of the flyway populations were exceeded; Ringed Plover, Kentish Plover, Knot, Sanderling and Bar-tailed Godwit.

An area of this importance needs our attention and calls for protected status. We were told by the local authorities that the Moroccan government is planning to create a National Park in this region which will include both Dakhla and Cintra Bays.

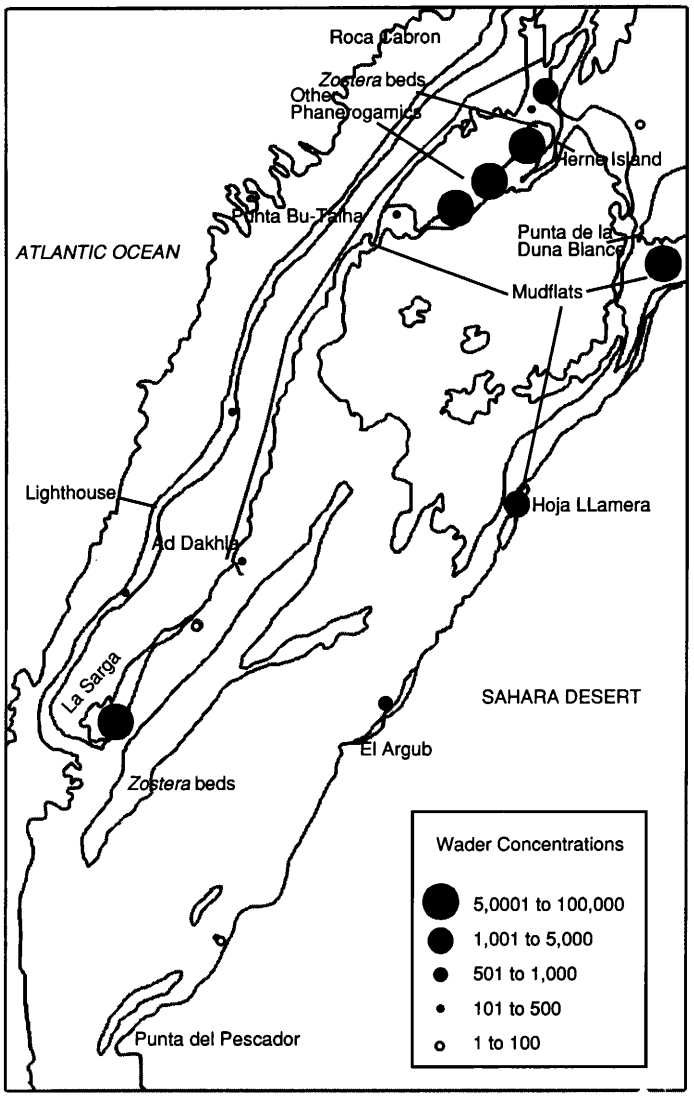

Figure 3. Dakhla Bay (Vila Cisneros) wader concentrations.

Further visits to the area in autumn and spring are planned and have been discussed with the local institutions. The idea is to undertake thorough surveys of migrating waders combined with ringing, thus providing better information on its role in the Palearctic-African migration system.

ACKNOWLEDGEMENTS

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